Unit–IV

7. The bivariate frequency distribution based on monthly salary and age of 100 clerks working in some large scale commerical organisation is as under :

	Monthly Salary (Rs.)			
Age (years)	600-700	700-800	800-900	900-1000
20 and less than 30	16	6	–	–
30 and less than 40	4	10	4	4
40 and less than 50	–	4	18	12
50 and less than 60	–	–	10	12

Compute Karl Pearson's coefficient of Correlation between age and monthly salary of clerks and Comment on it.

8. (a) The coefficient of Rank Correlation between debenture prices and share prices is found to be 0.143. If the sum of the squares of the differences in ranks is given to be 48, find the value of N.

(b) The following data relate to advertising expenditure and sales

Advertising Expenditure (Rs. lakhs) :	1	2	3	4	5
Sales (Rs. Lakhs) :	10	20	30	50	40

find out two regression equations.

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BT-5/D12

STATISTICAL ANALYSIS

Paper–TT-309-A

Time allowed : 3 hours] *[Maximum marks : 100*

Note : *Attempt **five** questions selecting at least **one** question from each unit.*

Unit–I

1. (a) Distinguish between Bar Diagram and Histogram. Draw a histogram for the following distribution relating to the marks scured by the students in a class of Engineering :

Marks :	0–5	5–10	10–15	15–20
No. of Students	5	15	25	50
Marks :	20–25	25–30	30–40	40–60
No. of Students	40	30	20	16

(b) From the following data calculate Mean, Mode and Median

Marks less than /up to:	10	20	30	40	50	60
No. of students :	10	30	60	110	150	180

2. (a) State the meaning of Population and Sampling. Explain the main objective of Sampling.

(b) How do you make a choice of suitable measure of Central Tendency ? Explain.

Unit–II

3. (a) Find the mean and standard deviation of first n natural numbers.

   (b) The following data are given to an economist for the purpose of economic analysis. The data refer to the length of certain type of batteries.

   $n = 100$, $\Sigma fd = 50$, $\Sigma fd^2 = 1970$, $\Sigma fd^3 = 2948$ and $\Sigma fd^4 = 86752$ in which $d = (X - 48)$. Do you think that the distribtution is platkurtic ?

4. (a) A ball contains 30 balls numbered from 1 to 30, one ball is drawn at random. Find the probability that the number of the drawn ball will be a multiple of (i) 3 or 5 and (ii) 4 or 7.

   (b) An insurance Company insured 2000 scooter drivers, 4000 car drivers and 6000 truck drivers. The probability of their accident is 0.1, 0.3 and 0.2 respectively. One of the insured persons meets with an accident. What is the probability that he is a scooter driver ?

Unit–III

5. (a) A machine part was designed to withstand an average pressure of 120 units. A random sample of size 100 from a large batch was tested and it was found that the average pressure which these parts can withstand is 105 units with a standard deviation of 20 units. Test whether the batch meets the specification.

   (b) A fertiliser mixing machine is set to give 4 kg of nitrate for every quintal bag of fertilizers. Five 100 bags are examined. The percentage of nitrate are : 2, 6, 4, 3, 1. Is there reason to believe that the machine is defective ?

6. (a) The following figures show the distribution of digits in numbers chosen at random from a telephone directory :

Digit	0	1	2	3	4	5	6	7	8	9	Total
Frequency	1026	1107	997	966	1075	933	1107	972	964	853	10000

   Test at 5% level whether the digits may be taken to occur equally frequently in the directory.

   (b) The following table gives the yield on 15 sample fields under three varieties of seeds (viz. A, B, C) : Test at 5% level of significance.

Yields		
A	B	C
95	93	100
96	98	103
98	92	97
91	100	103
95	90	107

[Turn over